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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,996	09/22/2003	Jiann-Hsing Chen	81622/LPK	1959

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EXAMINER

ZACHARIA, RAMSEY E

ART UNIT	PAPER NUMBER
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1773

DATE MAILED: 04/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/667,996

Applicant(s)

CHEN ET AL

Examiner

Ramsey Zacharia

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 February 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) 38-40 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 30-33 is/are allowed.
- 6) ☒ Claim(s) 1-20, 22-29 and 34-37 is/are rejected.
- 7) ☒ Claim(s) 21 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2/11/2005.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Election/Restrictions

2. Claims 38-40 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 11 February 2005.

Specification

3. Claim 17 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. The term "highly" in claim 17 is a relative term which renders the claim indefinite. The term "highly" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Use of the term "highly" renders the degree of crosslinking of the polydimethylsiloxane indefinite.

Claim Rejections - 35 USC § 103

5. Claims 1-20, 22-29, and 34-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Meguriya (U.S. Patent 6,261,214) in view of Chen et al. (U.S. Patent 5,599,631).

Meguriya teaches heat fixing roll comprising a thermosetting (i.e. crosslinked) organopolysiloxane composition containing a hollow filler (column 2, lines 7-12). The hollow filler has elasticity and is made of polymers of (meth)acrylonitrile, (meth)acrylate, or vinylidene chloride with inorganic particles attached to the walls thereof (column 2, lines 13-26). The hollow filler has a diameter of preferably up to 90 μm (column 2, lines 40-42). The preferred concentration of the hollow filler is 0.5 to 100 parts by weight per 100 parts of silicone, i.e. approximately 0.5 to 50 wt% (column 2, lines 52-55). Conductive agents, such as carbon black, zinc oxide, aluminum oxide, and titanium oxide, may be added to the silicone (column 4, lines 55-57). Silica (i.e. a strength-enhancing filler particle) having a particle size of about 0.1-50 μm may be added to the silicone (column 4, line 64-column 5, line 2). In the embodiment of Example 1, about 5 wt% of silica is added to the composition (column 6, lines 8-17). A fluoro-resin layer may be formed over the silicone layer (column 5, lines 15-23). The silicon is made by heating first at a temperature of about 100 to 150 $^{\circ}\text{C}$, then at about 180 to 200 $^{\circ}\text{C}$ (column 5, lines 24-28). Temperatures of 100 $^{\circ}\text{C}$ and above are elevated temperatures and there is an explicit teaching to post-cure the silicone at temperatures above about 180 $^{\circ}\text{C}$. The silicone has a thermal conductivity of as high as 5.0×10^{-4} cal/cm \cdot sec \cdot $^{\circ}\text{C}$, i.e. about 0.12 BTU/hr/ft/ $^{\circ}\text{F}$ (column 5, lines 29-31). The silicone layer has a preferred thickness of 0.2 to 50 mm, i.e. about 0.008 to 2 inches (column 5, lines 38-40). The preferred upper limit of the thickness of the fluoro-resin layer 50 μm , i.e. about 0.002 inch (column 5, lines 63-65).

Regarding claims 23, 24, and 28, the Shore A hardness is a material property. Since the silicone material taught by Meguriya appears to be the same as that used in the instant invention, it should have the same Shore A hardness.

Meguriya does not teach that the organopolysiloxane is a condensation-polymerized organopolysiloxane. However, Meguriya does that the organopolysiloxane may be any well-known thermosetting organopolysiloxane composition used in forming a silicone rubber layer on a heat fixing roll and cite an addition cured silicone as an example (column 2, lines 63-67).

Chen et al. is directed to a fuser roll for heat-fixing (column 1, lines 8-12). Chen et al. disclose that either condensation cured silicones or addition cured silicones maybe used to form cushion layers over which a fluoropolymer layer coated (column 4, lines 23-31).

Chen et al. show that condensation cured silicone and addition cured silicone are known in the art as equivalent silicones for forming a cushion layer in a heat-fixing roll. Therefore, because these two silicones were art-recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute a condensation cured silicone for an addition cured silicone in the roll of Meguriya, particularly since Meguriya explicitly teaches that any well-known silicone used in forming a silicone rubber layer on a heat fixing roll may be employed.

Regarding claim 7, Meguriya teaches all the limitations of this claim, except for the specific amount of conductive agent added to the silicone, although there is an explicit teaching to add conductive agent to the silicone.

The amount of conductive agent added to the silicone directly affects the conductivity of the silicone. That is, the amount of conductive agent added is a results effective variable.

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Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to optimize the amount of conductive agent in the silicone, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Response to Arguments

6. Applicant's arguments filed 11 February 2005 with respect to the rejection under 35 U.S.C. 112, 2nd paragraph, have been fully considered but they are not persuasive.

The applicants argue that the phrase "a highly crosslinking polydimethylsiloxane" is not considered to be indefinite by those in the art and cite U.S. Patent 6,437,012 for support (claim 1 of U.S. Patent 6,437,012 is directed to a "highly crosslinked" polymer). However, this is not persuasive because the specification of U.S. Patent 6,437,012 defines "highly crosslinked" for their purposes as containing at least 8 mole% cross-linking agent and swell less than 100% in THF or dichloromethane (see column 4, lines 8-23). In contrast, the instant invention does not define what is meant by "a highly crosslinking polydimethylsiloxane" and therefore the metes and bounds of claim 17 are unclear.

Applicant's arguments with respect to the art rejections of the claims have been considered but are moot in view of the new ground(s) of rejection.

Furthermore, the argument that claim 11 is further defined over Meguriya because it is directed to unexpanded microspheres that expand to hollow microballoons during polymerization while Meguriya teaches only microballoons is not persuasive. According to claim 1, the cushion base layer is a thermally cured polyorganosiloxane material made at an elevated temperature by a

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condensation-polymerization. Therefore, the microsphere particles of claim 11 are not unexpanded microspheres, rather they are hollow microballoons since the unexpanded microspheres expand to hollow microballoons during the condensation-polymerization.

Regarding claims 25-28, the applicants argue that the claims are directed to a pressure roller as opposed to Meguriya which is directed to a heat fixing roller.

This is not persuasive because Meguriya teach a roller that meets all of the structural limitations of instant claims 25-28. The designation of "pressure roller" is merely an intended use of the roller that does not add any structural features or limitations. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. It has been held that a recitation with respect to the manner in which a claimed product is intended to be employed does not differentiate the claimed product from a prior art product satisfying the claimed structural limitations. *Ex parte Masham*, 2 USPQ2d 1647 (1987). See *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 312 F.2d 937, 939, 136 USPQ 458, 459 (CCPA 1963).

Terminal Disclaimer

7. The terminal disclaimer filed on 11 February 2005 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of U.S. Patent 6,486,441 and copending Application No. 10/667,548 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Allowable Subject Matter

8. Claims 30-33 are allowed.
9. Claim 21 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter.

Claims 30-33 are directed to a fusing station rollers comprising a core, base cushion layer, and protective layer as recited. The Protective layer is a gloss control layer having a thickness of between approximately 0.001 to 0.004 inches and a thermal conductivity of between approximately 0.07 to 0.11 BTU/hr/ft/°F.

Meguriya represents the closest prior art. Meguriya teach an outer layer over the silicone layer, but neither teach nor suggest that the outer layer is for gloss control or the thermal conductivity of the outer layer.

Claim 21 is directed to a fusing station rollers comprising a core, base cushion layer, and protective layer as recited wherein the thermal conductivity of the base cushion layer is approximately between 0.2 -0.5 BTU/hr/ft/°F.

Meguriya represents the closest prior art. However, the upper limit of the thermal conductivity of the silicone layer of Meguriya is 5.0×10^{-4} cal/cm/s/°C (about 0.12 BTU/hr/ft/°F). Upon reconsideration and in view of the applicant's arguments, this upper limit of about 0.12 BTU/hr/ft/°F does not read on approximately 0.2 BTU/hr/ft/°F. The instant specification describes the scatter of thermal conductivity measurements as having an accuracy of about 0.01

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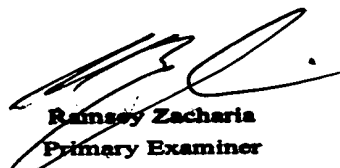
BTU/hr/ft²/°F (see page 28, lines 9-14). This supports the applicants' argument that approximately 0.12 BTU/hr/ft²/°F does not read on approximately 0.2 BTU/hr/ft²/°F.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramsey Zacharia whose telephone number is (571) 272-1518. The examiner can normally be reached on Monday through Friday from 9 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney, can be reached at (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Ramsey Zacharia
Primary Examiner
Tech Center 1700